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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,618	01/30/2004	Bert Pots	SHEL.110651/TH2545	6761
23632	7590	12/14/2005	EXAMINER	
SHELL OIL COMPANY P O BOX 2463 HOUSTON, TX 772522463			GARBER, CHARLES D	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/768,618	Applicant(s) POTS ET AL.	
	Examiner Charles D. Garber	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments, filed 10/14/2005, with respect to the rejection(s) of claim(s) 22 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Walters et al. (US Patent 3,539,915).

Regarding claim 1, Applicant argues Ando teaches measuring a voltage change created by a change in magnetic field, not measuring a voltage difference between tow location and a pipe.

In response to applicant's argument that Ando and Vail are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the problem is related to how one might move electrical contacts in spaced relation to different points in a pipe. Though Ando's is indeed generally related to measuring voltage changes caused by a magnetic field Examiner considers one having ordinary skill in the art would still recognize the usefulness of the Ando pipeline vehicle carrying spaced electrical contact to Vail. Nevertheless, Examiner withdraws this rejection in favor of the teachings of Walters noted above.

Applicant argues neither Vail nor Ando teach the device contact maintained as it moves as in claim 22.

While Vail does not expressly recite the "tool" maintains the electrodes in contact with the pipe as the "tool" moves, Vail does discuss the device operable "to locate collars in casing, imperfection in casing, corrosion holes in casing, imperfection in pipes, imperfection in pipelines, and to locate joints or break in pipelines" by observing the voltage change. In order to locate totally random occurrences such as imperfections in casing, corrosion holes in casing, imperfection in pipes, imperfection in pipelines, and to locate breaks in pipelines Examiner considers the device must be in continuous contact as it is moved through the casing.

Applicant argues with respect to claims 3, 4, 7, 10, 18, 29, 30, 33, 34 and 40 that Vail teaches a stationary device. Examiner does not agree. Vail tested the device in several wells on a "tool" retrieving data over substantial distances. Applicant further argues Ando "measures the change in a magnetic field, not a devise that measures a change in voltage." This is not consistent with what Applicant notes earlier - that Ando "teaches measuring a voltage change created by a change in magnetic field, not measuring a voltage difference between to location and a pipe." Nevertheless, Examiner concedes Ando does not teach the pig carrying electrodes in contact with the pipe surface. Examiner withdraws this rejection in favor of the teachings of Walters noted above. Applicant also argues Couchman teaches a device that measuring magnetic fluzx leakage, not a change in voltage. Examiner considers the use of brushes to make electrical contact with the pipe wall to be relevant despite the different sensing functions of the devices. However, as the newly applied Walters reference also teaches this Examiner withdraws the rejection based on Couchman in favor of Walters.

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Applicant argues with respect to claims 12 and 34 that the Potapenko reference teaches a voltmeter used as the surface rather than in a pipeline. Examiner withdraws the rejection based on a combination with Potapenko because Examiner considers a voltmeter to be an inherent part of the Vail reference as discussed below.

Applicant argues with respect to claims 13-15 and 35-37 against the combination relying upon Applicant's admitted prior art on the basis that the rejection cannot be maintained by Vail and Ando with respect to desirability of a first contact, a second contact, and a voltage reading device. This is taken as a tacit acceptance of the suggestion provided in Applicant Admission.

Applicant argues similarly with respect to claims 20, 21, 23-27 and the combination involving Ignagni. Likewise, Examiner takes this as a tacit acceptance of the suggestion provided by Ignagni.

Applicant argues similarly with respect to claims 16 and 38 and the combination involving Cloutier. Likewise, Examiner takes this as a tacit acceptance of the suggestion provided by Cloutier.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "three brushes and three knives" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

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replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 12 and 34 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Examiner considers a voltage reading device is a voltmeter and, likewise, a voltmeter is a voltage reading device by definition. There is no substantive distinction between these terms.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 22 and 42 each recite "the voltage error is reduced to a microvolt range". However, no numerical value is given for the range which renders the range and hence the claim indefinite. Is the range 0-1 microvolt? Is it 0-1000 microvolts? Is it 900-1000 microvolts? Examiner must disregard this limitation in order to examine these claims on the merits.

The remaining claims depending from indefinite claims 1 and 2 are indefinite for the same reason.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claims 1- 4, 6- 8, 10, 12, 22, 28, 29, 30, 33, 34 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vail, III et al. (US Patent 6,031,381 henceforth "Vail") in view of Walters et al. (US Patent 3,539,915 henceforth "Walters").

Regarding claims 1, 2, 22, 28 and 42, Vail teaches electrical voltage and resistances are measured to inspect pipelines for wall thickness and the location of any casing collar/pipe joints. Vail, teaches current passes from electrode A to electrode F along the casing, electrodes C, D, E are position apart from one another in electrical contact with the interior of casing and measure a voltage drop between electrodes C and D and electrodes D and E (abstract, figure 4, col. 8, lines 20-24). Figures 9-20 indicate the device is positioned over a wide range of distances from the opening (over 4,900 feet from the opening) but Vail does not expressly teach how the circuitry is positioned so far from the casing opening except to mention that the device is on a "tool".

Walters teaches an apparatus for detecting defects in a pipeline including a plurality of electrical contacts or brushes 24 and 25 used to make continuous electrical contact with the pipeline wall as spaced apart locations (see figure 1 and col. 4, lines 40-60).

It would have been obvious to one skilled in the art at the time the invention was made to mount Vail's pipeline inspection circuitry to a pig. The modification would enable the inspection circuitry to travel through the pipeline and inspect locations of choice that may be distant from the pipe opening and otherwise inaccessible by an operator.

While Vail does not expressly recite the “tool” maintains the electrodes in contact with the pipe as the “tool” moves, Vail does discuss the device operable “to locate collars in casing, imperfection in casing, corrosion holes in casing, imperfection in pipes, imperfection in pipelines, and to locate joints or break in pipelines” by observing the voltage change. In order to locate totally random occurrences such as imperfections in casing, corrosion holes in casing, imperfection in pipes, imperfection in pipelines, and to locate breaks in pipelines Examiner considers the device must be in continuous contact as it is moved through the casing. Furthermore, Walters teaches the brushes in continuous contact and It would have been obvious to one having ordinary skill in the art at the time the invention was made to maintain continuous contact so that no portion of the pipe is missed during inspection.

As for claims 12 and 34, Vail discloses “[v]oltages along the casing and resistance along the casing are measured” (abstract) which inherently requires a voltage metering (e.g. “voltmeter”) device as in the instant invention.

As for claim 6, Examiner takes Official Notice that noise reducers such as filters are widely known for reducing voltage signal noise and It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a noise reducer in order to improve resolution of the signal of interest and improve the performance of the device sensing ability.

Regarding claims 3, 4, 7, 8, 10, 29, 30 and 33, Vail does not expressly teach the first or second contacts are brushes.

Walters teaches that current contacts are brushes.

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Using brushes which are flexible allows the "diameter of the pig [to] be somewhat flexible" which will help in maintaining good electrical contact while negotiating "obstructions such as valve seats and debris" (column 3 lines 50-58, column 4 lines 40-60)

It would have been obvious to one skilled in the art at the time the invention was made to maintain contact with the inner wall of the pipeline regardless of the diameter of the inner wall of the pipeline.

Claims 13-15 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vail, III et al. (US Patent 6,031,381 henceforth "Vail") as modified by Walters et al. (US Patent 3,539,915 henceforth "Walters") and applied to claims 1, 2, 22 above and further in view of Applicant's admitted prior art ("Admission").

As to claims 13-15, 35-37 the references as applied above do not expressly teach an electromechanical device for reducing noise nor an electromechanical device is a mercury contact nor an electromechanical device is a slip ring contact. However, Admission on page 9, paragraph 26 teaches those skilled in the art will recognize that any number of contact devices and/or low noise electromechanical device may be used with the current invention. Mercury contacts by Mercotac Inc. have been used to successfully reduce noise to the microvolt range and slip rings by Airfyte Electronics Company have been used to transmit low noise signals.

Claims 20-21 and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vail, III et al. (US Patent 6,031,381 henceforth "Vail") as modified by

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Walters et al. (US Patent 3,539,915 henceforth "Walters") and applied to claims 1, 2, 22 above and further in view of Ignagni (US Patent 6,553,322).

As to claims 20-21, 23-27 the references as applied above do not expressly teach a location device for determining the position of the pig or that the location device is an odometer.

However, Ignagni teaches an inertial navigation system on board the pig traveling through the pipeline is used to continuously compute the geographic position of the pig.

It would have been obvious to one skilled in the art at the time the invention made to modify Ando's et al pig to travel through the pipeline to implement either in real time, or off-line using stored inertial sensor, odometer, and GPS survey data (abstract; col. 4, lines 41-65).

Claims 16 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vail, III et al. (US Patent 6,031,381 henceforth "Vail") as modified by Walters et al. (US Patent 3,539,915 henceforth "Walters") and applied to claims 1, 2, 22 above and further in view of Cloutier et al (US Patent 4,427,943 henceforth "Cloutier").

As to claims 16 and 38 the references as applied above do not expressly teach compensating for thermocouple voltages.

However, Cloutier teaches a temperature and misalignment compensation circuit where diode D is connected to a temperature to voltage converter 24.

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It would have been obvious to one skilled in the art at the time the invention was made to incorporate temperature compensation circuit to a pig/vehicle that travels in a pipeline for tracking objects/inspection of a pipeline.

Allowable Subject Matter

Claims 5, 9, 11, 17, 18, 19, 31, 33, 39, 40 and 41 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Garber whose telephone number is (571) 272-2194. The examiner can normally be reached on 8:00 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

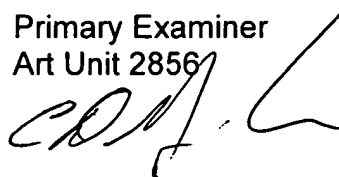
Charles D. Garber

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Primary Examiner
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A handwritten signature in black ink, appearing to be 'CDL', written over the printed name of the Primary Examiner.

cdg